

WHAT IS CLAIMED IS:

1. A safety device for braking an elevator car in an elevator system, the elevator system including at least one guide rail having at least one guide surface thereon, the  
5 safety device comprising:

a retaining element;

an abutment spaced from and fixed relative to said retaining element;

10 a braking element movably positioned between said retaining element and said abutment and spaced a distance from said retaining element sufficient to accept a portion of a guide rail therebetween, said braking element having a rest position spaced from a guide surface of the guide rail;

15 a lever mechanism connected to said braking element for moving said braking element from said rest position to a braking readiness position contacting the guide surface of the guide rail whereby when said safety device is mounted on the elevator car and said braking element is in said braking readiness position, downward movement of the elevator car causes said  
braking element be squeezed between the guide surface of the guide rail and said abutment for braking the elevator car; and

20 an operating mechanism connected to said lever mechanism for selectively moving said braking element between said rest position and said braking readiness position.

25 2. The safety device according to claim 1 wherein said braking element is a blocking roller.

30 3. The safety device according to claim 1 wherein said abutment is angled relative to said retaining element whereby an interspace between said retaining element and said abutment narrows opposite a predetermined direction of motion of the elevator car.

4. The safety device according to claim 1 wherein said lever mechanism swivels around an axle.

5. The safety device according to claim 1 wherein a position of said braking element is changeable along a guide of said lever mechanism.

5        6. The safety device according to claim 5 wherein said guide is formed by a groove or an oblong recess in a suspension of said blocking roller.

7. The safety device according to claim 5 said guide is shaped to hold said braking element in said rest position.

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8. The safety device according to claim 1 wherein said operating mechanism applies a force to said braking element for bringing said braking element into contact with the guide surface and keeping said braking element in a state of equilibrium whereby during a movement of the elevator car, said braking element is moved  
15 automatically relative to said abutment and opposite to the direction of motion of the elevator car.

9. The safety device according to claim 1 wherein said operating mechanism includes an electromagnet activated by electrical current to act upon said lever  
20 mechanism to maintain said braking element in said rest position away from the guide surface.

10. The safety device according to claim 9 wherein said electromagnet includes a bolt connected to said lever mechanism and a spring acting on said bolt, whereby when  
25 said electromagnet is activated by electrical current, said bolt is moved by a magnetic field to maintain said braking element in said rest position against a force applied by said spring, and when said electromagnet is not activated, said spring moves said braking element toward said braking readiness position.

11. The safety device according to claim 10 wherein said force applied by said spring is a preload on said braking element and when said electromagnet is not activated, said braking element moves automatically with a movement of the elevator car relative to said abutment and opposite to the direction of motion of the elevator car under said  
5 preload.

12. The safety device according to claim 1 wherein the guide surface is one guide surface of the guide rail and said retaining element is a first guiding element for guiding the elevator car alongside another guide surface of the guide rail.  
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13. The safety device according to claim 12 including a second guiding element spaced a distance from said first guiding element for guiding the elevator car alongside the one guide surface.

14. The safety device according to claim 13 wherein said retaining element and said second guiding element form parts of a safety device block.  
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15. The safety device according to claim 1 wherein said retaining element and said abutment are formed as legs of a U-shaped safety device block attached to a base  
20 and an interspace between said abutment leg and the guide surface is narrowed opposite the direction of motion of the elevator car.

16. The safety device according to claim 1 wherein said retaining element has a guide and brake lining attached thereto, said guide and brake lining being made of a  
25 material that exhibits a small coefficient of friction in response to a small surface pressure and a large coefficient of friction in response to a large surface pressure.

17. A safety device for braking an elevator car in an elevator system, the elevator system including at least one guide rail having at least one guide surface thereon, the safety device comprising:

- a first leg having a guide and brake lining attached thereto;
- 5 a second leg spaced from and fixed relative to said first leg;
- a blocking roller movably positioned between said first leg and said second leg and spaced a distance from said first leg sufficient to accept a portion of a guide rail therebetween, said blocking roller having a rest position spaced from a guide surface of the guide rail;
- 10 a lever mechanism connected to said blocking roller for moving said blocking roller from said rest position to a braking readiness position contacting the guide surface of the guide rail whereby when said safety device is mounted on the elevator car and said blocking roller is in said braking readiness position, downward movement of the elevator car causes said
- 15 blocking roller be squeezed between the guide surface of the guide rail and said second leg for braking the elevator car; and
- an operating mechanism connected to said lever mechanism for selectively moving said blocking roller between said rest position and said braking readiness position.

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18. The safety device according to claim 17 said first leg and said second leg are formed as legs of a U-shaped safety device block attached to a base and an interspace between said second leg and the guide surface is narrowed opposite the direction of motion of the elevator car.

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